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Harry Richard Claringburn

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KIRSCHSTEIN, OTTINGER, ISRAEL
& SCHIFFMILLER, P.C.
425 FIFTH AVENUE
5TH FLOOR
NEW YORK, NY 10016-2223

EXAMINER

KIM, DAVID S

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/517,671	Applicant(s) CLARINGBURN, HARRY RICHARD	
	Examiner DAVID S. KIM	Art Unit 2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/9/04, 9/19/05.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24-46 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Khaleghi et al.

2. **Claims 24, 25, 29, 31-33, 35, 36, 40, 42-44, and 46** are rejected under 35 U.S.C. 102(b) as being anticipated by Khaleghi et al. (U.S. Patent No. 6,040,933, hereinafter “Khaleghi”).

Regarding claim 24, Khaleghi discloses:

A method of controlling signal launch power of at least one optical signal in an optical communication network, comprising the step of:

pre-distorting the launch power (e.g., “amount of optical power adjustment of the channel transmitters” in the abstract; e.g., “amount (Z) of transmitter optical power adjustment” in col. 6, l. 33-39) of the at least one optical signal in accordance with a known value of a bandwidth of a modulation signal used to modulate the at least one optical signal (e.g., “signals having different bit rates” in the abstract; e.g., “amount (Z)” is determined in accordance with “bit rate”/bandwidth, shown in col. 6, l. 16-33).

Regarding claim 25, Khaleghi discloses:

The method as claimed in claim 24, wherein the pre-distorting step is performed by pre-distorting the launch power (e.g., “amount of optical power adjustment of the transmitters” in the abstract; e.g., “amount (Z) of transmitter optical power adjustment” in col. 6, l. 33-39) of the at least one optical signal in accordance with a known value of expected noise on a signal path of the at least one optical signal (e.g., “using...noise figures” in the abstract; “amount (Z)” is determined in accordance with “amount of adjustment (Xi)”, which is determined in accordance with “noise figure” in col. 4, l. 36 – col. 5, l. 11).

Regarding claim 29, Khaleghi discloses:

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The method as claimed in claim 24, wherein the at least one pre-distorted optical signal is passed through an optical amplifier (OA1, OA2, OA3, or OA4 in Figs. 3 and 4).

Regarding claim 31, Khaleghi discloses:

The method as claimed in claim 25, wherein the known value for expected noise on the signal path of the at least one optical signal is derived from a knowledge of a number and a type of an optical amplifier through which the at least one optical signal will pass (col. 2, l. 40-50).

Regarding claim 32, Khaleghi discloses:

The method as claimed in claim 24, wherein the optical communication network carries an n channel multiplex (multiplexer 22 in the figures), and wherein the pre-distorting step is performed by an optical amplifier (incorporation of influence of optical amplifiers in col. 5, l. 1-8).

Regarding claim 33, Khaleghi discloses:

The method as claimed in claim 24, wherein the launch power of the at least one optical signal with an associated modulation signal of a higher bandwidth is pre-distorted to increase a signal level of the at least one optical signal compared to an optical signal with an associated modulation signal of a lower bandwidth (col. 6, l. 6-16).

Regarding claim 35, Khaleghi discloses:

An apparatus for controlling signal launch power of at least one optical signal in an optical communication network, comprising:

a) a launcher for launching the at least one optical signal onto the network (e.g., transmitters in the figures); and

b) means for pre-distorting the launch power (e.g., "amount of optical power adjustment of the channel transmitters" in the abstract; e.g., "amount (Z) of transmitter optical power adjustment" in col. 6, l. 33-39) of the at least one optical signal in accordance with a known value of a bandwidth of a modulation signal used to modulate the at least one optical signal (e.g., "signals having different bit rates" in the abstract; e.g., "amount (Z)" is determined in accordance with "bit rate"/bandwidth, shown in col. 6, l. 16-33).

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Regarding claims 36, 40, and 42-44, claims 36, 40, 42, 43, and 44 introduce limitations that correspond to the limitations introduced by claims 25, 29, 31, 32, and 33, respectively. Therefore, the recited limitations in claims 25, 29, and 31-33 read on the corresponding limitations in claims 36, 40, and 42-44.

Regarding claim 46, Khaleghi discloses:

The apparatus as claimed in claim 35, wherein the apparatus is an add/drop node (e.g., ADM in Figs. 3 and 4).

Barnard et al.

3. **Claims 24, 29, 32, 35, 40, 43, and 46** are rejected under 35 U.S.C. 102(b) as being anticipated by Barnard et al (U.S. Patent No. 6,115,157, hereinafter "Barnard").

Regarding claim 24, Barnard discloses:

A method of controlling signal launch power of at least one optical signal in an optical communication network, comprising the step of:

pre-distorting the launch power (e.g., "transmitter powers are adjusted" in the abstract) of the at least one optical signal in accordance with a known value of a bandwidth of a modulation signal used to modulate the at least one optical signal (e.g., "in accordance with the channel rate" in the abstract).

Regarding claim 29, Barnard discloses:

The method as claimed in claim 24, wherein the at least one pre-distorted optical signal is passed through an optical amplifier (e.g., 10, 20, 30 in Figs. 3, 6, and 7).

Regarding claim 32, Barnard discloses:

The method as claimed in claim 24, wherein the optical communication network carries an n channel multiplex (multiplexer 13 in Figs. 3, 6, and 7), and wherein the pre-distorting step is performed by an optical amplifier (notice that the received power R1 and R2 will incorporate the influence of the optical amplifiers in Figs. 3, 6, and 7).

Regarding claim 35, Barnard discloses:

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An apparatus for controlling signal launch power of at least one optical signal in an optical communication network, comprising:

a) a launcher for launching the at least one optical signal onto the network (e.g., transmitters in Figs. 3, 6, and 7); and

b) means for pre-distorting the launch power (e.g., "transmitter powers are adjusted" in the abstract) of the at least one optical signal in accordance with a known value of a bandwidth of a modulation signal used to modulate the at least one optical signal (e.g., "in accordance with the channel rate" in the abstract).

Regarding claims 40 and 43, claims 40 and 43 introduce limitations that correspond to the limitations introduced by claims 29 and 32, respectively. Therefore, the recited limitations in claims 29 and 32 read on the corresponding limitations in claims 40 and 43.

Regarding claim 46, Barnard discloses:

The apparatus as claimed in claim 35, wherein the apparatus is an add/drop node (e.g., ADM in Fig. 7).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Khaleghi

5. **Claims 26, 27, 37, and 38** are rejected under 35 U.S.C. 103(a) as being unpatentable over Khaleghi, as applied to the claims above, and further in view of Weik (*Fiber Optics Standard Dictionary*, 3rd ed.).

Regarding claim 26, Khaleghi does not expressly disclose:

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The method as claimed in claim 25, wherein the known values are provided by management systems of the optical communication network.

However, there must be some source for providing these “known values” of the prior art of record. Management systems are well known in the art for providing data for use in decision making, as exemplified by Weik (p. 567, “management information system” and “management system”). These “known values” constitutes data for use in decision making. Accordingly, management systems would provide an obvious source for providing these “known values”.

Regarding claim 27, Khaleghi does not expressly disclose:

The method as claimed in claim 25, wherein the known values are provided by a network and connectivity information unit.

However, there must be some source for providing these “known values” of the prior art of record. Notice that these “known values” constitute network and connectivity information. For example, “a known value of a bandwidth of a modulation signal used to modulate the at least one optical signal” of the prior art of record (“bit rate”/bandwidth in col. 6, l. 16-33) constitutes information about the “bit rate”/bandwidth of an optical signal in the network, i.e., network information. For another example, “a known value of expected noise on a signal path of the at least one optical signal” of the prior art of record (“noise figure” in col. 4, l. 36 – col. 5, l. 11) constitutes information about the “signal path”/connectivity in the network, i.e., connectivity information. Accordingly, any suitable source for these “known values” would constitute “a network and connectivity information unit”. Management systems are well known in the art for providing data for use in decision making, as exemplified by Weik (p. 567, “management information system” and “management system”). These “known values” constitutes data for use in decision making. Accordingly, management systems would provide an obvious source for providing these “known values”, thus constituting “a network and connectivity information unit”.

Regarding claims 37 and 38, claims 37 and 38 introduce limitations that correspond to the limitations introduced by claims 26 and 27, respectively. Therefore, the recited limitations in claims 26 and 27 read on the corresponding limitations in claims 37 and 38.

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6. **Claim 28** is rejected under 35 U.S.C. 103(a) as being unpatentable over Khaleghi, as applied to the claims above, and further in view of Ramaswami et al. (*Optical Networks: A Practical Perspective*, hereinafter "Ramaswami").

Regarding claim 28, Khaleghi does not expressly disclose:

The method as claimed in claim 25, wherein the known values are supplied by a supervisory channel.

However, there must be some medium for supplying these "known values" of the prior art of record from the source of these "known values" of the prior art of record. The technique of a supervisory channel is well known in the art, as exemplified by Ramaswami (p. 425, middle paragraph, "supervisory channel"), for providing communications for management functions. Since these "known values" are used for management functions (e.g., management of functions of Khaleghi), the supplying of these "known values" would constitute providing communications for management functions. Accordingly, a supervisory channel would provide an obvious medium for providing communications for management functions, e.g., supplying these "known values" from the source of these "known values".

7. **Claims 34 and 45** rejected under 35 U.S.C. 103(a) as being unpatentable over Khaleghi.

Regarding claim 34, Khaleghi does not expressly disclose:

The method as claimed in claim 25, wherein the launch power of the at least one optical signal is pre-distorted to increase a signal level of the at least one optical signal when the expected noise on the signal path of the at least one optical signal through the network is higher compared to an optical signal having a lower than expected noise on its signal path through the network.

However, notice that the prior art of record does incorporate expected noise (incorporation of influence of noise F in col. 5, l. 1-8) in an equation to determine how to control the signal level of an optical signal (amount of adjustment X_i in col. 5, l. 1-8). This equation is broad enough in scope to encompass a variety of situations, including the situation where "the expected noise on the signal path of the at least one optical signal through the network (channel i in col. 5, l. 1-8) is higher compared to an optical signal having a lower than expected noise on its signal path through the network (channel ref in col. 5, l. 1-8)". In such a situation, one possible result would be "to increase a signal level of the at least

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one optical signal". Moreover, the prior art of record also more generally suggests the use of an increased signal level for an optical signal with higher noise (col. 6, l. 10-16).

Regarding claim 45, claim 45 introduces limitations that correspond to the limitations introduced by claim 34. Therefore, the recited limitations in claim 34 read on the corresponding limitations in claim 45.

8. **Claim 39** is rejected under 35 U.S.C. 103(a) as being unpatentable over Khaleghi in view of Weik, as applied to the claims above, and further in view of Ramaswami.

Regarding claim 39, claim 39 introduces limitations that correspond to the limitations introduced by claim 28. These limitations introduced by claim 28 are addressed by Ramaswami. Similarly, Ramaswami is applied here to address the corresponding limitations in claim 39.

Barnard

9. **Claims 30 and 41** are rejected under 35 U.S.C. 103(a) as being unpatentable over Barnard as applied to the claims above, and further in view of Weik.

Regarding claim 30, Barnard does not expressly disclose:

The method as claimed in claim 29, wherein the pre-distorting step is performed by using a **comparator**, which compares a signal derived from an output of the optical amplifier with a reference signal dependent on the known value of the bandwidth of the modulation signal used to modulate the at least one optical signal.

However, Barnard does disclose the *function* of comparing "a signal derived from an output of the optical amplifier (e.g., BER(2) in Fig. 3) with a reference signal dependent on the known value of the bandwidth of the modulation signal used to modulate the at least one optical signal (e.g., BER(2)_{Fail} in col. 7, l. 27-29)".

Obviously, any suitable device that performs this *function* of comparing would constitute a **comparator**. Moreover, a comparator is a well known device in the field of art, as shown by Weik (p. 145, "comparator"). Accordingly, using a **comparator** to perform the *function* of comparing in Barnard would provide an obvious variation.

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Regarding claim 41, claim 41 introduces limitations that correspond to the limitations introduced by claim 30. Therefore, the recited limitations in claim 30 read on the corresponding limitations in claim 41.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Zhou et al. (U.S. Patent Application Publication No. 2002/0015201 A1) is cited to show pre-emphasis techniques in a DWDM optical transmission system (abstract).

Goodwin et al. (U.S. Patent No. 6,701,089 B1) is cited to show equalization of the performance of channels by adjusting the transmission powers of optical transmitters in an amplified WDM fiber optic communication system (abstract).

Islam et al. (U.S. Patent No. 6,819,479 B1) is cited to show launched signal powers selected as a function a noise figure (abstract).

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID S. KIM whose telephone number is (571)272-3033. The examiner can normally be reached on Mon.-Fri. 9 AM to 5 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth N. Vanderpuye can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/D. S. K./

Examiner, Art Unit 2613

/Kenneth N Vanderpuye/

Supervisory Patent Examiner, Art Unit 2613